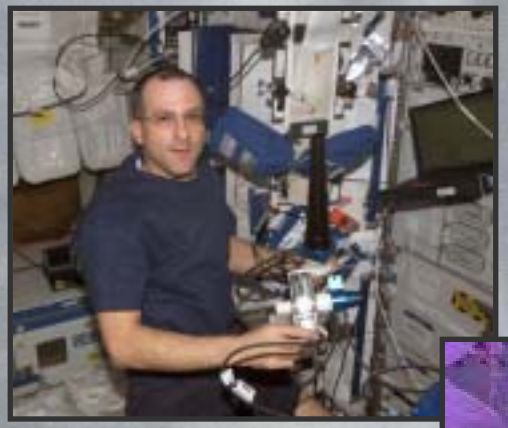
Science Onboard ISS

76 scientific investigations, as of April 2004, were completed using seven U.S. research facilities on orbit.

- *Biomedical research studying the effects of microgravity on human physiology. Don Petitt is experimenting with Pulmonary function in Flight.*
- *Astroculture research on plant growth in space shown here with first ISS science officer, Peggy Whitson*
- *Microgravity science in materials using the new Microgravity Glove Box facility shown here with Ken Bowersox*
- *Earth observations by Carl Walz for environmental science*



This July 2, 2002 image shows soybean plants growing in the Advanced Astroculture experiment

Science Onboard ISS

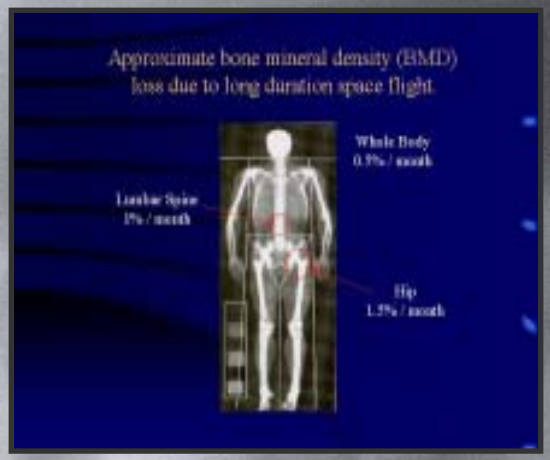
Sub-Regional Assessment of Bone Loss in the Axial Skeleton in Long-Term Space flight

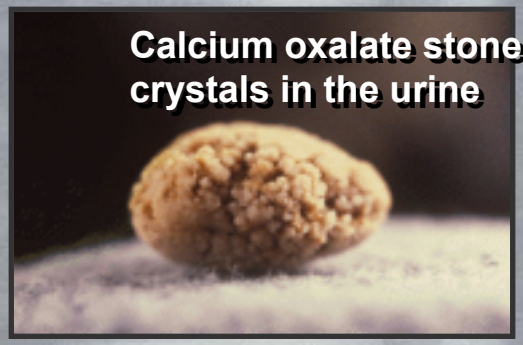
Renal Stone Risk During Space flight: Assessment and Countermeasure Validation

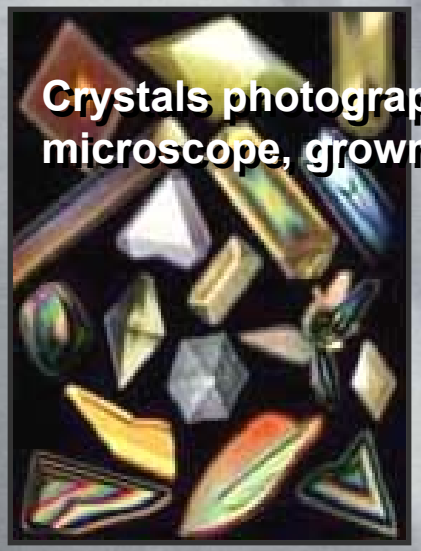
Physical Science experiments obtain bio-molecular crystals in low gravity environment

Physics of Colloids in Space seeks answers to fundamental questions - on nucleation, growth and morphology , etc.

Biotechnology research and three-dimensional tissue culturing







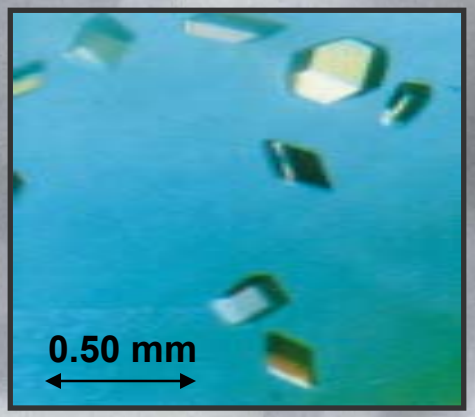
Science Onboard ISS

Protein Crystal growth such as these space-grown crystals are more perfectly ordered and sometimes larger, allowing higher resolution x-ray analysis.

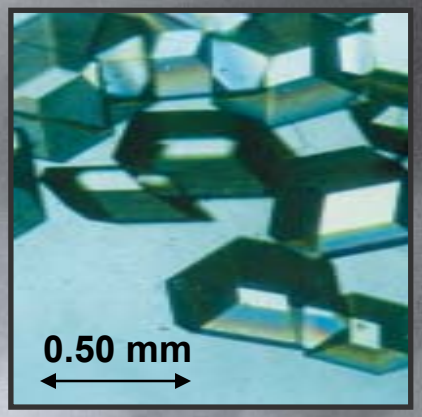
In Space Science studies aimed at discovering the sources (e.g., comets) of interplanetary cosmic-dust particles and what is heir linkage to the evolution of the solar system.

"Almost every chapter in the combustion textbooks will be rewritten as a result of microgravity work."

-Professor Emeritus Howard Palmer,
Penn State University



Grown on Earth

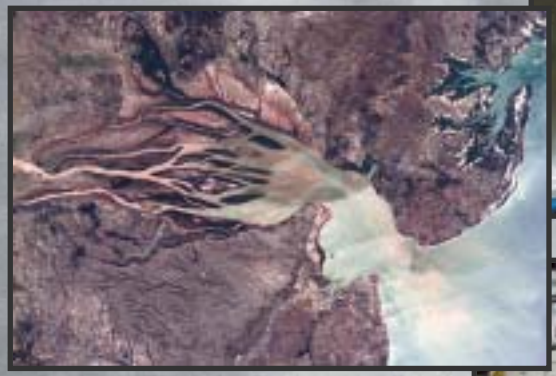


Grown in Space

Science in the Russian Service Module

The Service Module, deployed in July 2000, has been the site of continuous research by Russian partners

US Laboratory Today



Current US Research Facilities (Racks) on board

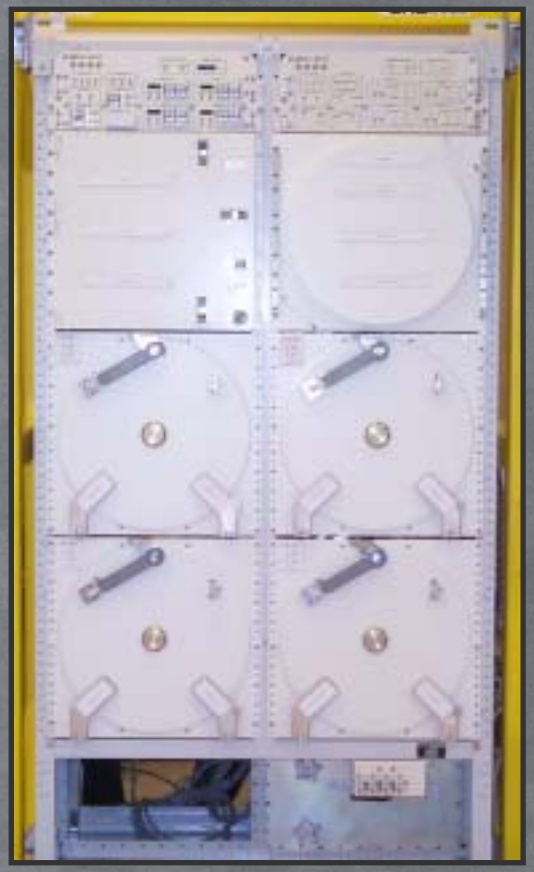
Human Research Facility Rack

Microgravity Science Glovebox

5 EXPRESS Racks

US Research Racks going up next

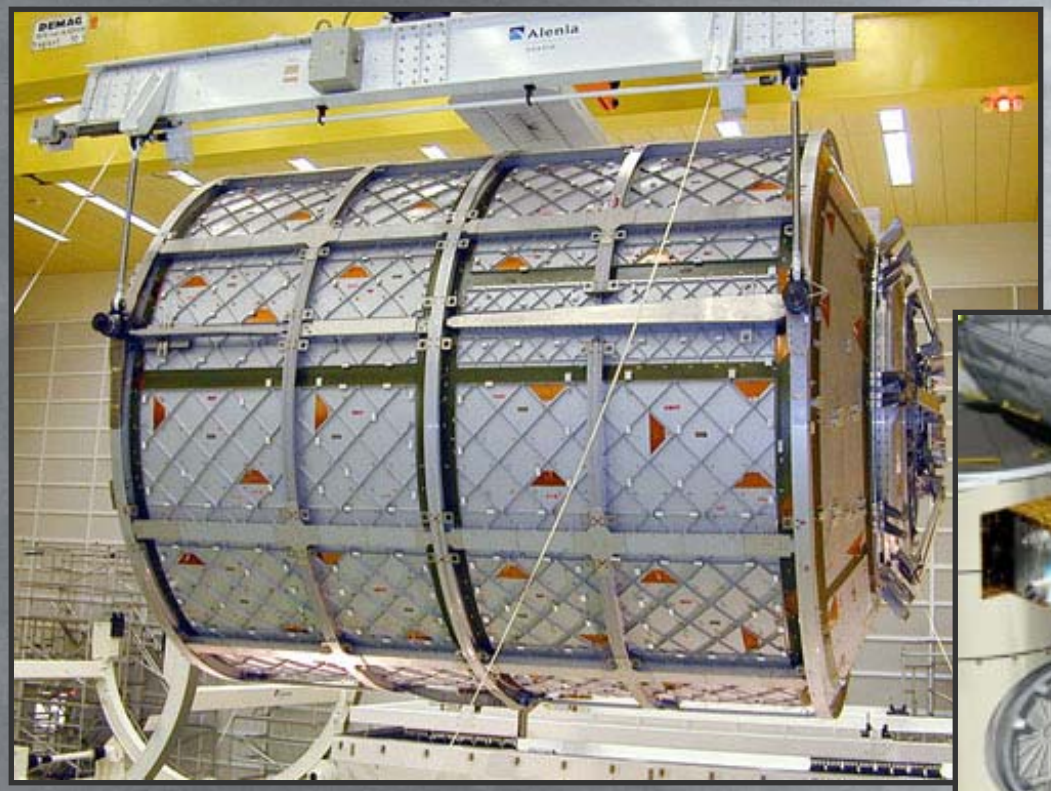
Minus 80 Degree Lab Freezer (MELFI)



Window Observation Research Facility (WORF)

Human Research Facility (HRF2)

Laboratories of the future



ESA's Lab "Columbus"

Laboratories of the future

Japanese Experiment Module "Kibo"